San Mateo Creek Basin

Navajo Nation Consultation

February 14, 2018

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9882801

Why NPL Listing is Needed

- Only means to ensure protection of drinking water supplies
  - Private water wells
  - Municipal water supplies for Milan and Grants

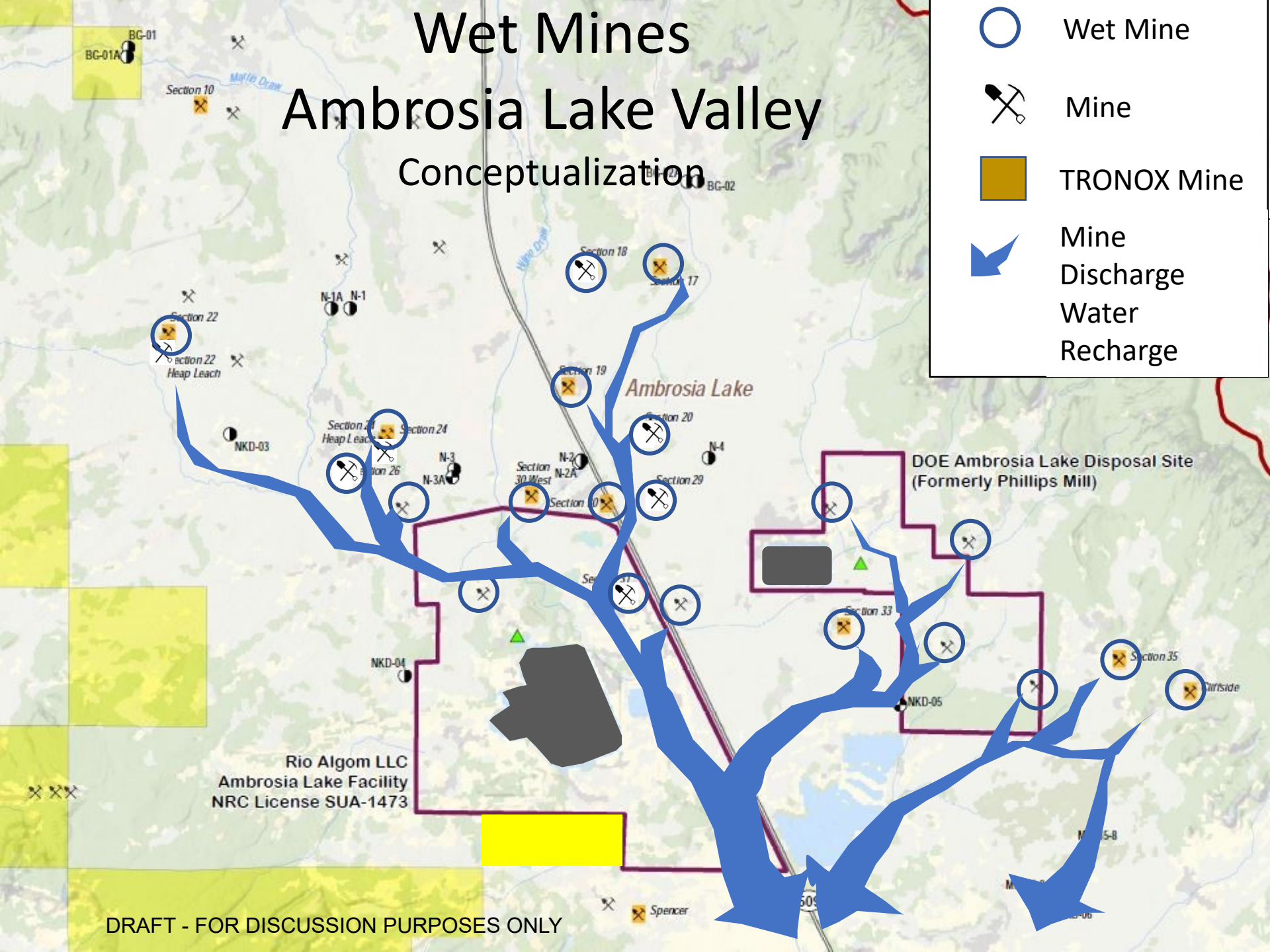
Purpose of NPL

- Comprehensive approach to address threats to drinking water
- Engage responsible parties and stakeholders

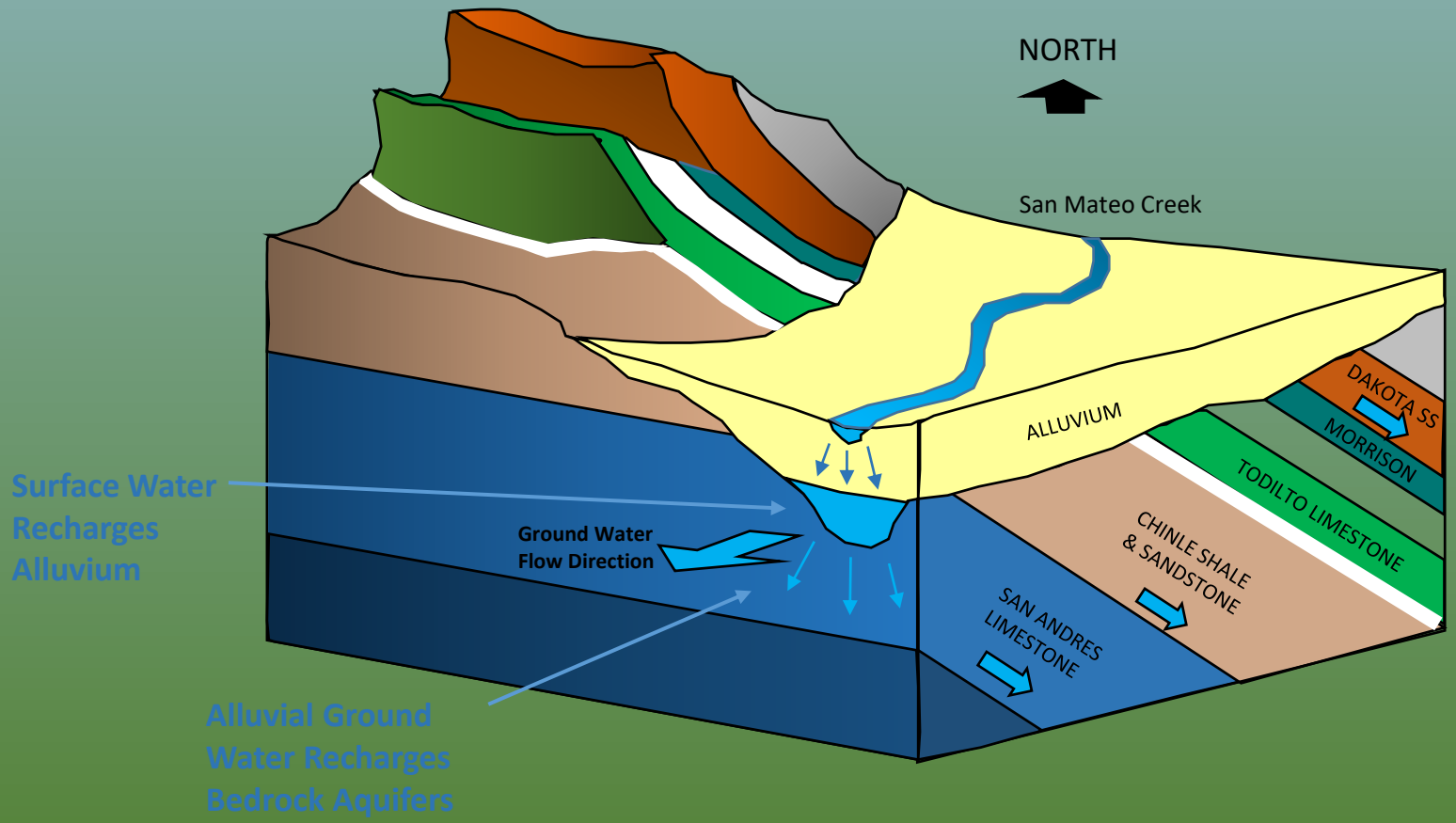
San Mateo Creek Basin Background

- Area of significant uranium mining and milling
  - Began in late 1950s
  - Over 90 legacy uranium mines and 4 uranium mills
  - Thousands of exploratory boreholes drilled
  - Underground workings dewatered at many mines
- Mine water discharged to surface drainages
  - Over 3 decades of operations
  - Untreated until late 1970s

Wet Mines
Ambrosia Lake Valley
Conceptualization



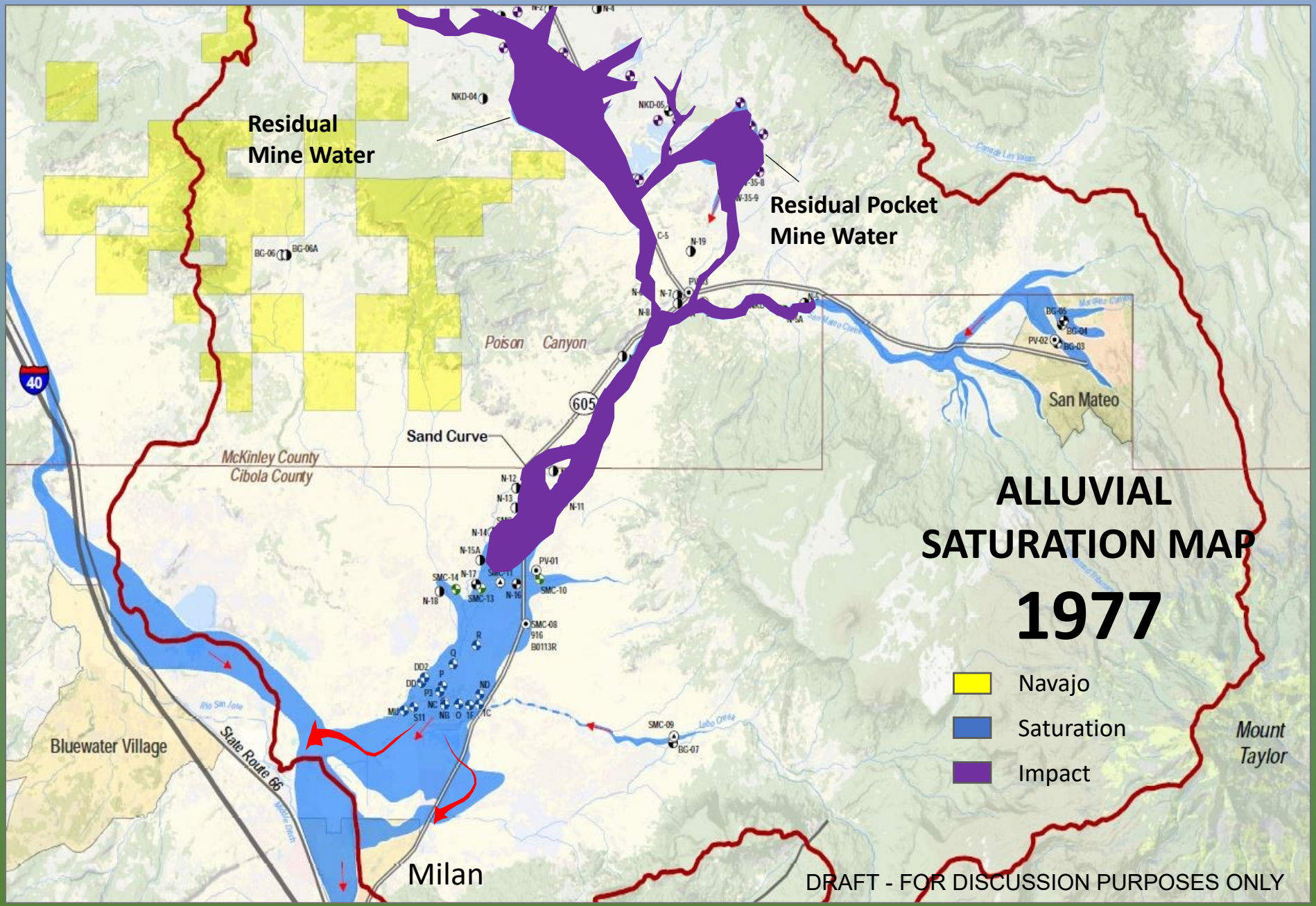
Conceptual Site Model – Ground Water



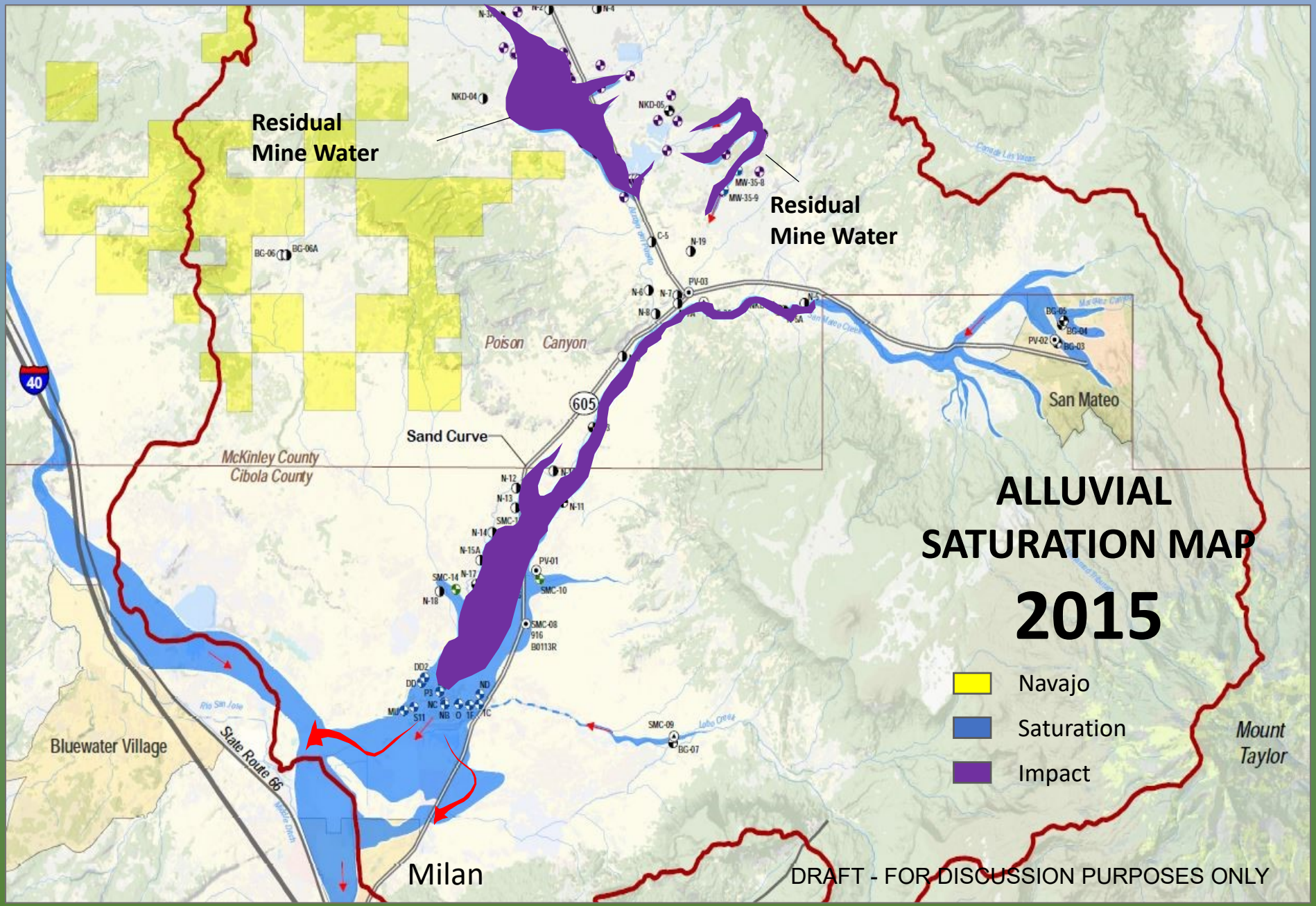
San Mateo Creek Basin
Mine Discharge Water Impacts

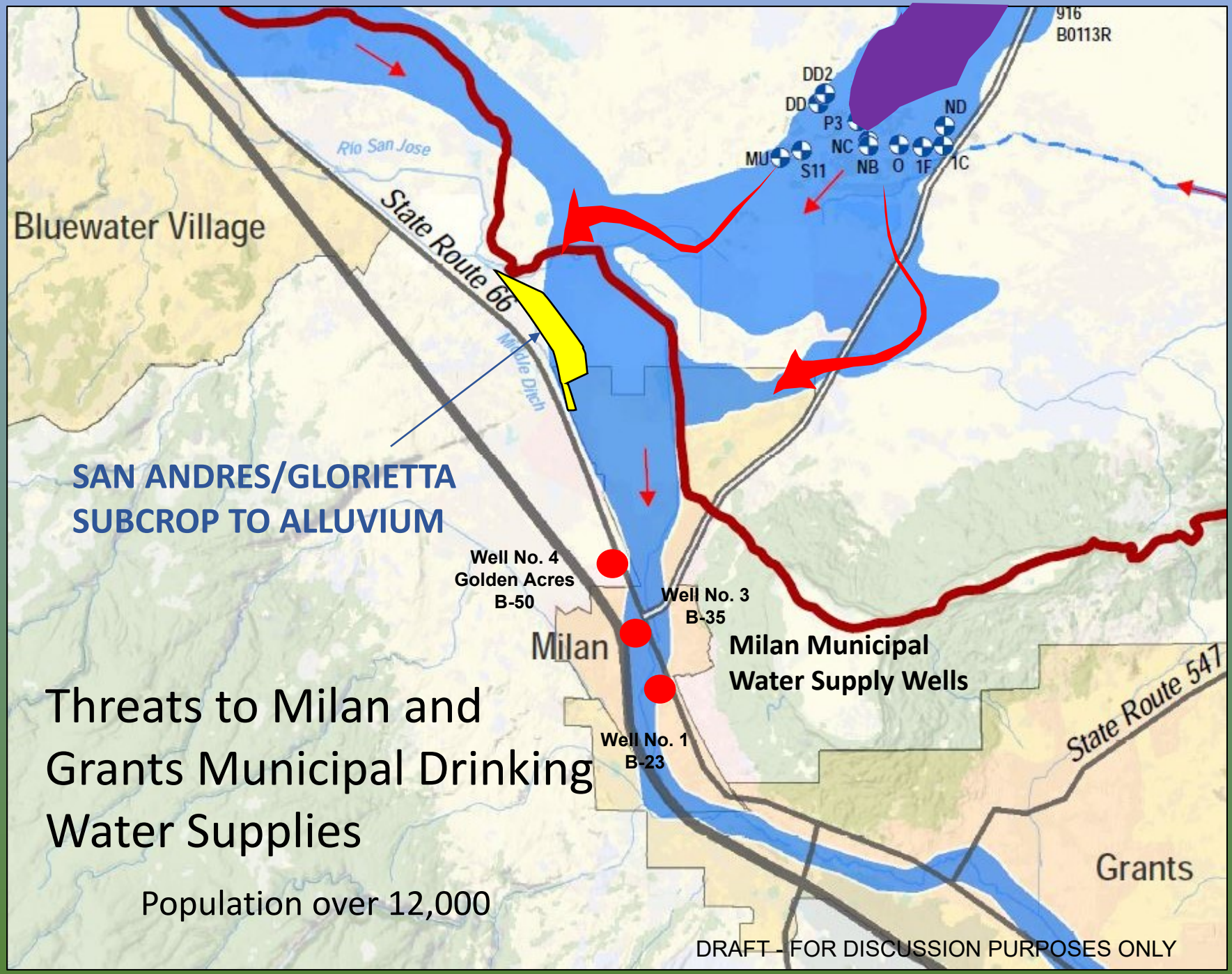
- Over 150 billion gallons discharged (1956 to 1982)
- High uranium, selenium, radium & gross-alpha
- Recharged Alluvial Aquifer on massive scale
- Recharged some bedrock aquifers
- Impacted private wells
- Threatens drinking water supplies

Mine Discharge Water Impacts



Mine Discharge Water Impacts




916
B0113R
DD2
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P3
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MU
S11
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1F
1C
Rio San Jose
Bluewater Village
State Route 66
Middle Ditch
SAN ANDRES/GLORIETTA
SUBCROP TO ALLUVIUM
Well No. 4
Golden Acres
B-50
Well No. 3
B-35
Milan
Milan Municipal
Water Supply Wells
Well No. 1
B-23
State Route 547
Grants
Threats to Milan and
Grants Municipal Drinking
Water Supplies
Population over 12,000
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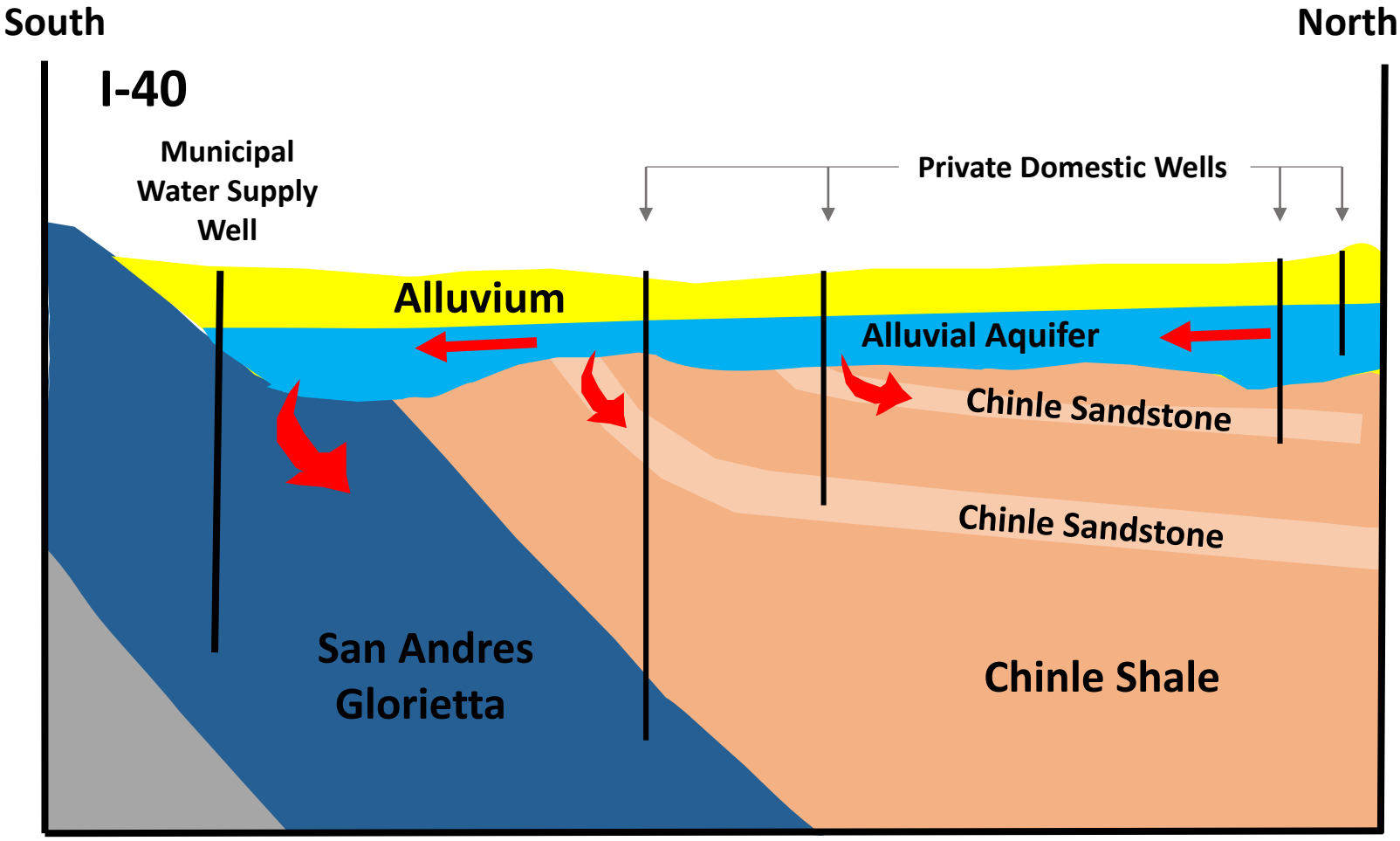
Generalized Geologic Cross Section
Milan Area



Not to Scale

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San Mateo Creek Basin Ground Water Investigations

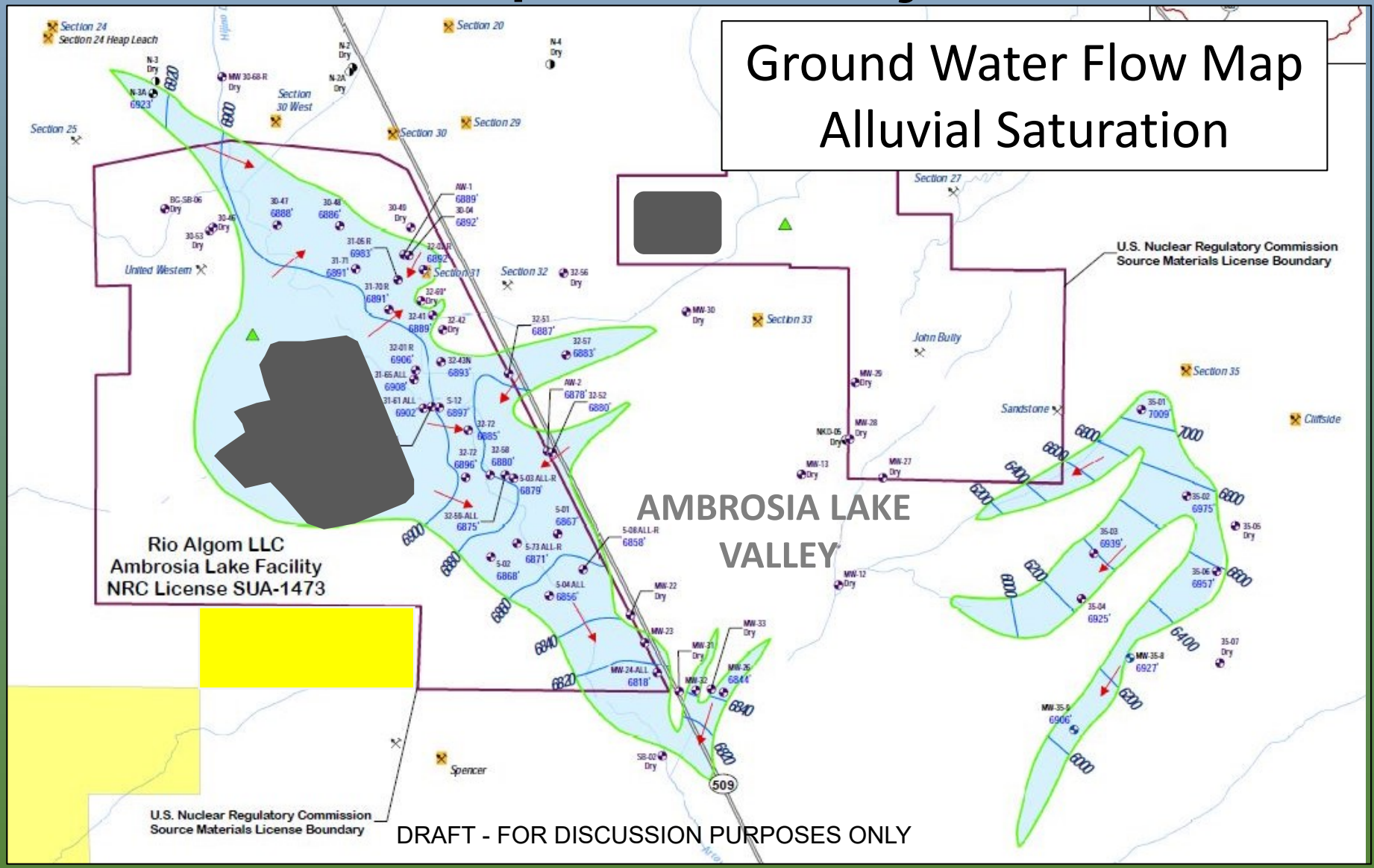
- **EPA Fund Lead Activities**
  - **$1.7 M** Spent through FY17
  - 2008-2010 New Mexico Environment Department – PA, SI, and Pre-Screens)
  - 2010-2011 Documented Release Sampling Reports (2 Tronox)
  - 2012-2016 Phase 1 Ground Water Investigation
  - 2016-present Hazard Ranking System (Region and HQ)

- **Tronox Funded Phase II Ground Water Investigation**
  - **$1.44M** - Total Spent through FY17
  - FY15 & FY16 Total Approved Amounts - $2.35M
  - Project reviewed by Tronox Stakeholder Group

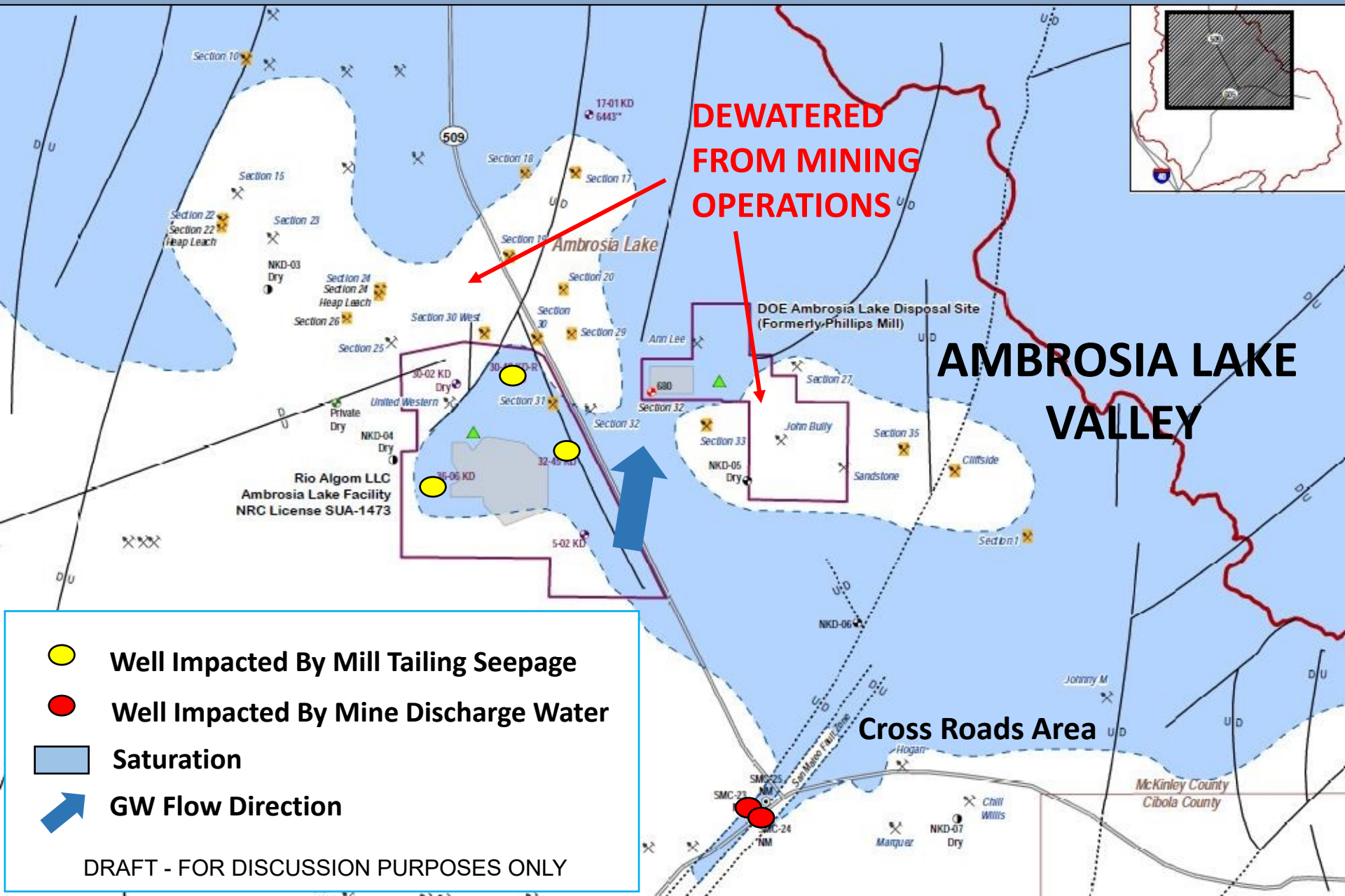
SMCB CERCLA Investigation Benefits to Navajo Nation

- Determined Alluvial contamination not impacting Navajo land
- Completed Dakota Sandstone Aquifer assessment
  - Significant areas remain dewatered
  - Mill contamination within NRC license boundary
- Identified need for further investigation of deeper aquifers
  - Protect Navajo Nation natural resources

Residual Mine Water in Alluvium Does Not Impact Navajo Land



Dakota Saturation Map



Mine Water Discharge
Potential Health Risks

- Contamination up to 1100 ppm uranium in private wells
- Health risks include kidney disease and cancer
- Exposure routes are ingestion (drinking) and inhalation (showering)
- Provided 4 filtration systems and drilled 1 new well

Benefits of NPL Listing

- Ensures safe drinking water
- Provides comprehensive framework to address groundwater contamination
- Allows for multiple parties to participate in cleanup
- Leverages resources to address contamination (Federal and private)

San Mateo Basin Community Outreach

- Community outreach integral part of CERCLA
- Consultation with Navajo, Laguna and Acoma (February 2018)
- State of New Mexico (January 2018)
- City of Grants, Village of Milan (January 2018)
- Counties of McKinley and Cibola (January 2018)
- Community meetings (April 2018)

Questions

- Contact Information:

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OTHER SLIDES

HRS and Site Assessment Process

Site Assessment Phase

Site Discovery → Preliminary Assessment (PA) → Site Inspection (SI) → **Hazard Ranking System (HRS) Scoring**

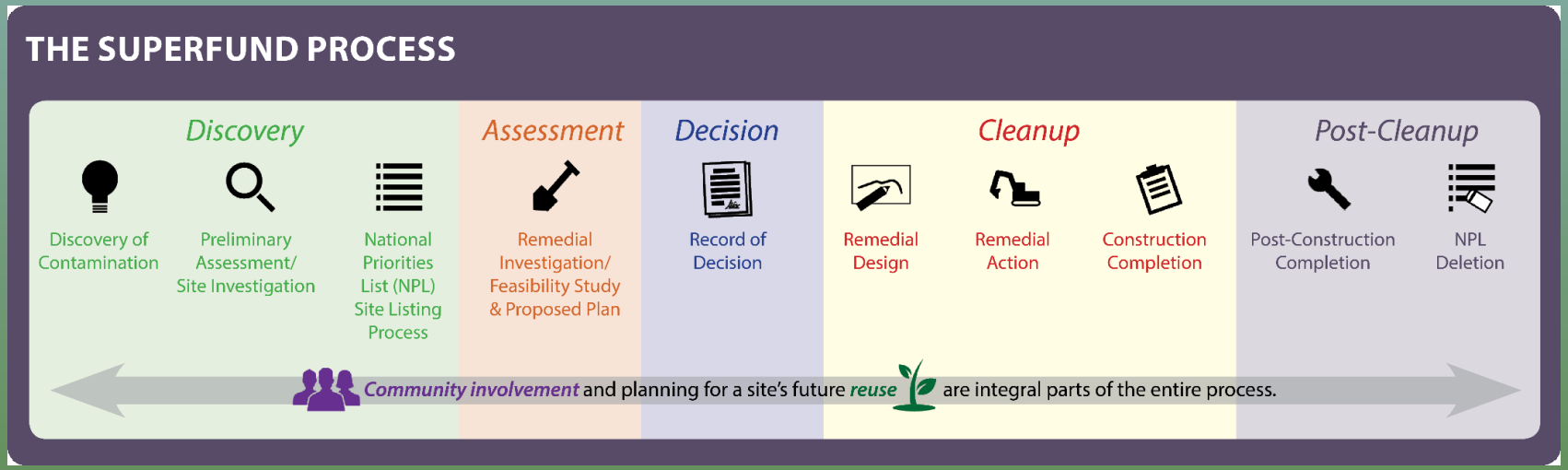
NPL Listing Process

Proposal to National Priorities List (NPL) → Final Rule Adding Site to NPL

Remedial Phase

Remedial Investigation/ Feasibility Study (RI/FS) → Record of Decision (ROD) → Remedial Design/ Remedial Action (RD/RA) → Operation and Maintenance (O&M) → Site Deletion

Overview of the Superfund Remedial Process (Long Term Cleanups)

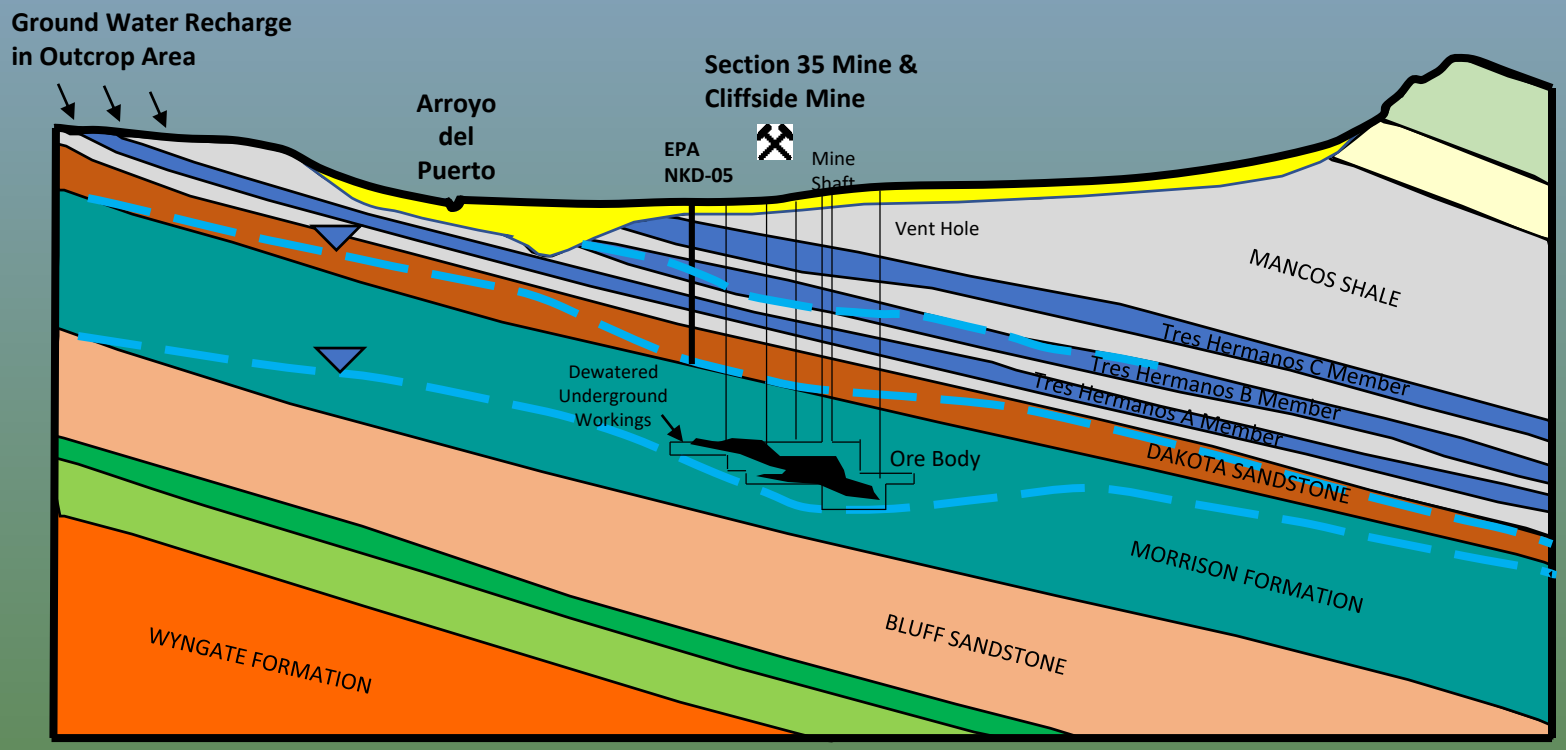


Community Involvement and Superfund Reuse are integral components at every step in the Superfund Process

GENERALIZED CROSS SECTION B-B'
AMBROSIA LAKE AREA

B
South

B'
North



Modified from Kerr McGee Nuclear Corporation, 1980

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Estimated Water Level

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Defining the NPL Site

- Mine Water Discharge from Wet Mines primary source
- Four Mine Water Discharge Systems that received discharge from seventeen wet mines and four ion-exchange plants
- Documented points of discharge from Johnny M and Mt. Taylor Mine Ponds
- Seven wet mines which discharged to San Mateo Creek.
- Mills are currently not being evaluated as part of the potential NPL site

Impacts of Mine Water Discharge: CERCLA Investigations

- March 2008 — NMED completes PA of San Mateo Creek Basin
- January 2009 — NMED issues health advisory for private wells
- 2009/2010 — NMED conducts Pre-CERCLIS screens
- August 2010 — First GMD 5-year plan includes impacts to GW
- 2010/2011 — R6 conducts sampling at 9 mines (2 Tronox mines)
- 2012-2016 — R6 conducts Phase I Ground Water Investigation
- 2015-2016 — Region 6 conducts Phase II Ground Water Investigation

San Mateo Creek Basin CERCLA Investigations

- Documented contamination of the shallow aquifer
- Uranium/gross alpha present in private drinking water wells above drinking water standards
- Shallow aquifer in direct contact with multiple deeper aquifers
- Migration of hazardous substances to underlying aquifers
- Hazardous substances potentially impact public water supplies